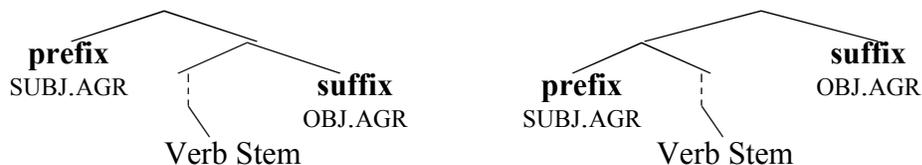# Seven prefix-suffix asymmetries in Itelmen

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This paper examines the morphophonology of the verb word in Itelmen, a Chukotko-Kamchatkan language spoken by fewer than 100 people on the Okhotsk coast of Russia's Kamchatka peninsula. Our particular focus is asymmetries between the inflectional prefixes and inflectional suffixes. The primary goal of this work is descriptive—to provide a description of some new data along with a suggestion of a new approach to some previously published data. We also have a theoretical goal here, which is to shed light on the question: is there evidence for an asymmetric morphological structure in Itelmen, and if so, is the inflectional prefix more or less peripheral to the verb stem than the suffix? The question may be phrased as the choice between two representations in (1).

(1)   a. *[prefix [[verb] suffix]]*   OR   b. *[[prefix [verb]] suffix]*

We will review below seven ways in which agreement prefixes and agreement suffixes in Itelmen display differing behaviour. The tentative conclusion that we will reach is that the asymmetries considered here in some cases directly support (1)a over (1)b, and in the remaining cases the data is not inconsistent with the structure in (1)a. We conclude then, that the balance of evidence weighs in favour of (1)a. This converges with the result of a purely morphological investigation of Itelmen agreement reported in Bobaljik & Wurmbrand 1997 and Bobaljik 2000. In section 1, we present some relevant background information, including a highly abbreviated sketch of our previous work. This will serve as a convenient starting point for the investigation of the asymmetries to be considered here. The first three (section 2) are phonological in nature and have to do with cases in which the stem + suffixes together form a domain which appears to exclude the prefixes. After presenting these, we consider in section 3 two ways in which the prefix+stem juncture is special in a manner that the stem+suffix juncture is not. Before concluding, we consider (section 4) two other morphological properties which distinguish inflectional prefixes from inflectional suffixes.

1 Background on Itelmen agreement
In Itelmen, as in the other Chukotko-Kamchatkan languages, agreement is expressed by means of combinations of prefixes (sometimes null) and suffixes. The basic transitive pattern is illustrated in (2).[1]

(2) a. kma   t'-əlču-[ɣ]in   b. q-əlču-βum   kma
        I   1SG-see-2SG.OBJ   2.IRR-see-1SG.OBJ   me
        'I saw you.'   (S1:71)   'Look at me!'   (S1:75)

     c. n-əlču-[ɣ]in   d. n-əlču-z-um
        3PL-see-2SG.OBJ   3PL-see-PRES-1SG.OBJ
        'They saw you.'   (S1:77)   'They see me.'   (S1:77)

The prefix indicates the features of the subject (and mood). The proper characterization of the suffix agreement is more complex, but we have argued elsewhere (Bobaljik & Wurmbrand 1997, 2001) that at its core the suffix is a marker of object agreement and we will adopt that analysis here.
The agreement pattern for intransitive verbs is illustrated in (3). Note that here the intransitive subject triggers agreement twice, once in the prefix and again in the suffix.[2]

(3) a. kma   t-k'oɬ-kičen   b. q-k'oɬ-xč
        I   1SG-come-1SG.SUB   2.IRR-come-2SG.SUB
        'I came/arrived.'   (S3:13)   'Come!'   (S3:20)

We take it here as given that the prefixes and suffixes are not to be analysed as circumfixes since the combinations are straightforwardly decomposable into their constituent pieces. For example, the segment /t-/ is used with all and only first person singular subjects (realis mood), regardless of the transitivity of the verb or the particular object suffix occurring. Once this assumption is granted, one can reasonably ask the questions identified in the introduction: is there any evidence for a hierarchical organization of the morphemes that make up the verb, and if so, for what organization: (1)a or (1)b?

1.1 Asymmetries in Allomorphy
In Bobaljik & Wurmbrand 1997, 2001 and Bobaljik 2000 a partial answer to this question arose from a particular analysis of Itelmen agreement morphology. In those works, we noted that there are complex interactions between (the features of) the prefixes and the suffixes which are strikingly asymmetric in the following way. The prefixes (as noted above) reflect only the person and number of the subject and mood (and in one case transitivity), but in no case are do the prefixes reflect the features of the object. The suffixes, by contrast, are primarily markers of object agreement, but the final choice of suffix marker is conditioned by (e.g., shows allomorphy for) a range of factors including the features expressed by the prefixes (person and number of subject and to a limited degree, mood). This is illustrated in (4) which lists the transitive agreement suffixes along with the object features they express and (after the slash) the contextual features that condition their occurrence.

(4)   Transitive (Object) Agreement Suffixes

    Sg   Pl.

Sg	Pl.		
-čen	-čeʔn	⇔ [3] / 1SUBJ (or impersonal)	
-(i)n	-(i)ʔn	⇔ [3] / 2SG.SUBJ, REALIS MOOD	
-x	-xiʔn	⇔ [3] / 2SG.SUBJ, IRREALIS MOOD, CLASS I	
-xč	-iʔn	⇔ [3] / 2SG.SUBJ, IRREALIS MOOD, CLASS II	
-sx	-sxiʔn	⇔ [3] / 2PL.SUBJ	
-nen	-neʔn	⇔ [3] / 3.SUBJ	
-βum (No)	-βuʔm (No)	⇔ [1]	(So = -məŋ , -məʔŋ)
-(ɣ)in	-sxen	⇔ [2]	

In order to account for this (and other) asymmetries in the kinds of conditioning effects in instances of allomorphy, Bobaljik & Wurmbrand 1997, 2001 and Bobaljik 2000 propose that the Itelmen verb has the structure in (1)a (with the prefix more peripheral) and that allomorphy conditioned by syntactic features such as agreement is always conditioned by more peripheral features. For the purposes of this paper, then, we will take this proposal as a point of departure, and investigate to what degree independent evidence can be brought to bear on this issue.[3]

2 The evidence from phonological domains
2.1 Schwa epenthesis[4]

Itelmen displays strikingly complex consonant clusters, showing up to 7 consonants in initial position (5)a and up to 5 in medial (5)b and final positions (5)c. Clusters are tolerated at juncture and morpheme-internally.

(5)   a. **čkpəč** 'spoon'   **tɸsčŋ**in 'you carry it'   **kstk'ɬkn**an 'he jumped down'

        b. ip**ɬχ**enk 'friend DAT'   si**tɬxpk'ə**ɬ 'with embers'

        c. ip**ɬχ** 'friend'   k'**ənsɬxč** 'boil it!' (MP, S3:1, Georg & Volodin 1999:42)

Sonorant consonants (i.e., {l,r,m,n,ŋ,β,z}, hereafter "R") do not occur internal to medial or final clusters. When such clusters would arise for morphological reasons, schwa epenthesis is triggered (cyclically in verbs, non-cyclically in nouns). In Bobaljik 1998a, the schwa-epenthesis rule is formulated as in (6).

(6) $\emptyset \rightarrow \partial\ /\ \begin{Bmatrix} C \\ \# \end{Bmatrix}\ \underline{\quad}\ R\begin{Bmatrix} C \\ \# \end{Bmatrix}$

The examples in (7) illustrate cases of schwa-zero alternations attributable to (6).

(7) a. ɬxəm   sable   a'.ɬxm-ɐʔn   sable-PL
     b. spəl   wind   b'.spl-ank   wind-LOC
     c. ʷtχəz-xʔal   road-ABL   c'.ʷtχz-enk   road-LOC
     d. il-əz-in   drink-PRES-3SG d'.tχzu-z-in   stand-PRES-3SG

Now, it turns out that the inflectional prefixes (of which only the agreement prefixes are relevant) are systematically exempt from (6). The examples in (8) illustrate four agreement prefixes which begin with nasals, but which do not trigger schwa-epenthesis when they occur pre-consonantally.

(8) a. **m**-sk-čeʔn   'I will make them'   m- = 1SG.SUBJ.IRREALIS (MP)
     b. **n**-txuŋ-əz-nin 'They are pulling it out' n- = 3PL.SUBJ.TRANS (KL16)
     c. **n**-qzu-z-um   'She is waiting for me'   n- = IMPERS. SUBJ. (KL17)
     d. **n**t'-utu-z-iʔn 'We are trying…them'   nt- = 1PL.SUBJ (KL 16)

The failure of schwa-epenthesis at the left edge is not a general property of Itelmen phonology. That is, word-initial clusters are not uniformly exempt from (6). While quirks of the morphology conspire to prevent us from finding schwa-zero alternations at the left edge of the word, more subtle evidence that (6) comes from the fact that all all attested instances of schwa-initial stems conform to environments derivable from (6). For example, of the approximately 76 distinct stems that begin with a schwa in Volodin & Khaloimova 1989, 73 are of the form #__RC… (and in the remaining three the schwa is followed by a geminate sonorant consonant). The examples in (9) are representative of the general phonological environments in which schwa occurs stem-initially.

(9) əŋqs(q)-   'hurt'   ə**ŋqs-q**-aɬ-iʔn 'they will hurt' (MP)
     ənsxt-   'bear (verb)'   k-ə**nsx**t-iʔn 'they bore them' (MP)
     əŋqa   'what?' (SW 17)
     ənʲčpa-   'teach' (SW 41) qa'm ənʲčpa-q 'you don't teach her' (SP39)
     əlʲčqu-   'see'   n-əlčqu-zum 'they see me' (S1:77)
     ənʲč   'fish' (S) [noun]

The failure of schwa-epenthesis at the left edge is also not a property of all Itelmen prefixes. For example, the lexical causative (i.e., transitivizing) prefix *ən*- illustrated in (10) (from Volodin 1976:201-2) appears to be subject to schwa epenthesis.
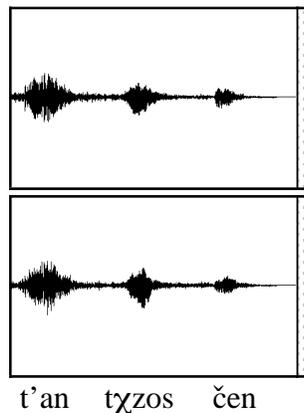
(10)   qop-kes 'to suffocate, choke'   ən-qop-ŋ-es 'to suffocate, choke (TRANS)'
       qetet-kes 'to freeze'   ən-qetet-eβ-es 'to freeze (TRANS)'
       k'ol-kes 'to break'   ən-k'ol-es 'to break (TRANS)'

It is therefore a special property of the agreement prefixes that they are exempt from the schwa epenthesis rule. There are no exceptions to epenthesis in suffix positions, hence we suggest that the data point to a phonological domain for schwa epenthesis, a domain that includes the stem and suffixes (and derivational prefixes), but which the agreement prefixes fall outside of. If this phonological domain reflects morphological constituency, then this provides a strong argument that the prefixes are more peripheral than the suffixes.[5]
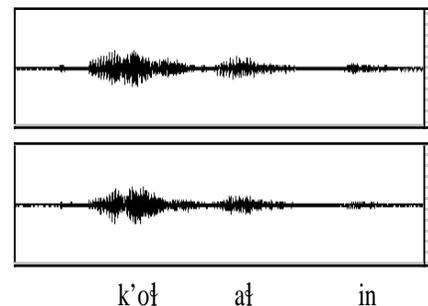
2.2 Prominence[6]

Within the domain identified above, i.e., excluding the inflectional prefixes, prominence falls on the first syllable (i.e., the first occurrence of vowel or schwa, even if epenthetic). There is no evidence of metrical structure beyond this—after the first relevant syllable, prominence tapers off gradually to the right edge. Prominence is indicated in (11), the corresponding wave forms give a rough sense of the tapering off effect.[7]

(11)   a. t'-**án**-tχzo-s-čen   d. **k'óɬ**-aɬ-in
           1:SUBJ-CAUS-stand-PRES-1>3SG   come-FUT-3SG:SUBJ
           'I'm placing it.' (S3:88)   'He will come.' (S3:89)

t'an   tχzos   čen   k'oɬ   aɬ   in

Importantly, prominence is not limited to the stem/root. This is apparent already in (11)a in which the most prominent syllable is a derivational prefix (at least historically). In (12), the roots contains no vowels and prominence falls on the first (leftmost) syllabic suffix. The wave form corresponding to (12)b illustrates the contrast in prominence between the two suffixes.

(12)   a. čχ-**qzú**-in   b. [t]-tɸ-s-**kí**-čen
           rain-ASP-3SG   1SG:SUBJ-bring-PRES-II-1>3SG
           'It rained.' (S3:26)   'I'm bringing it' (KL 312s)

tɸski   čen
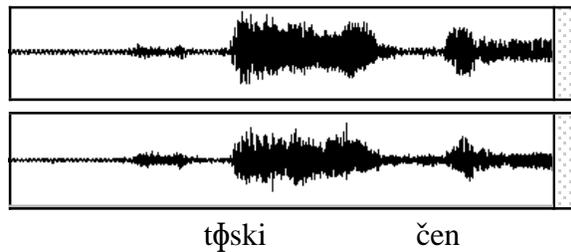
Bringing the inflectional prefixes into the picture, the situation becomes somewhat less clear. We believe that the proper generalization to make is this: the prefixes (i.e., those that have syllabic nuclei) constitute an independent domain for prominence. In effect, there is a plateau over the first two syllables in the following examples , relative to following syllables both the inflectional prefix and the first syllable of the stem are prominent (this is only partly discernable from the wave-forms, though note the sharp drop in prominence on the final syllable in (13)b).

(13)   a. **x̌ǽn-ə́lʲč**qu-um   b. **x̌ǽn-k'ó̷ł**-in

         3SUBJ:IRREALIS-see-1SG:OBJ   3SUBJ:IRREALIS-come-3:IRREALIS

         ~'(He) won't see me.' (S3:24 (143b)) ~'Let them come.' (S3:20)

xɐn əlʲ   č   qu.um   xɐn   k'oł   in
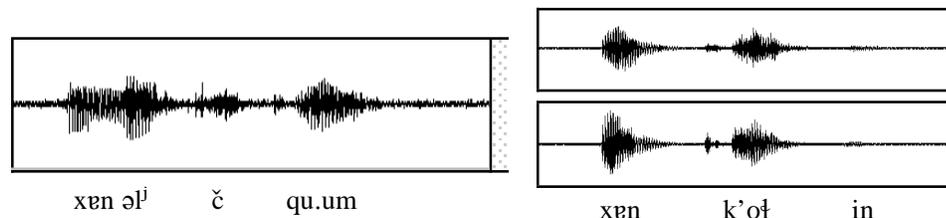
While true minimal pairs cannot be constructed (due to the morpheme inventory of the language), close pairs such as (14) contrast quite strikingly. In (14)a, the first syllable is the root and there is a clear contrast in prominence between the two. In (14)b, the first syllable is an agreement prefix and both syllables (the second is a suffix as the root has no syllabic nuclei) receive roughly equal prominence.

(14)   a. **χán**-n-an   b. **x̌ǽn-ł-nín**

         DEMONSTR-ATTRIB-CASE   3SUBJ:IRREALIS-take-3SUBJ/3SG.OBJ

         'to over there' (S3:13)   ~'Let him take it.' (S3:89)

In conclusion, what we find in examining prominence in Itelmen is that there are two domains, organized as in (15).[8] Note that the inflectional suffixes fall within the same prominence domain as the stem (including derivational affixes), but that the agreement prefixes are outside this domain, i.e., more peripheral.

(15)   [prefix_{agreement}] [stem + suffixes]

2.3 Vowel Harmony

The Chukotko-Kamchatkan vowel harmony system is clearly detectable in Itelmen within living memory, though it is no longer intact for any except the oldest speakers of the Southern varieties. This is a dominant-recessive system, in which the presence of a dominant vowel (for Itelmen: a,o) triggers lowering of all recessive vowels (i,e,u → e,a,o) (see Kenstowicz 1979 for a discussion of the related Chukchi harmony system). Schwa is neutral and transparent, and morpheme boundaries do not matter. A dominant vowel in the stem will lower a recessive vowel in a suffix (16), and a dominant vowel in a suffix will lower a recessive stem vowel (17).

(16)   Locative: /-enk/   laχsx-**ank**   < laχsx 'mother'
                              isx-**enk**   < isx 'father'

(17)   isx 'father':   **isx**-enk   + Locative -enk/-ank
                              esx-anke   + Dative -anke

In particular, it is clear from a study of texts collected in the early 20th century (published as Worth 1961) that once quirks of the orthography are controlled for (such as writing "i' for schwa, and the indication of excrescent "a" between a uvular stop and a voiced sonorant) the vowel harmony system extended to the inflectional suffixes (Bobaljik 1996). This was still largely true in the 1970s, as Volodin 1976:45 reports, giving examples including the following.

(18)   a. t'-ił-**kičen**   'I went (out)' c. k'-umni-**knen**   'he stopped'
          b. t-laɣʷ-ał-**kečan** 'I will say'   d. k-čawa-**knan**   'he met him'

In the (a) and (c) examples, the stem contains only recessive vowels (u,i) and the suffixes surface with recessive vowels, but where the stem contains the dominant vowel (a), the suffix vowels are lowered.[9] Regarding the inflectional prefixes, the only candidate for an investigation of vowel harmony is the 3rd plural irrealis prefix *xɐn-* (Volodin's хăн-) as no other prefixes contain vowels other than schwa. Volodin does not comment on this prefix specifically, but he gives no examples in which the prefix triggers vowel harmony, even when examples with this prefix occur in the section discussing vowel harmony. For example, illustrating the alternation u~o in the root /nu/- 'eat', Volodin 1976:49 gives the following.

(19)   a. xɐn-nu-ɣʷen 'Let him eat' vs. c. no-nom   'food-NOMINALIZER'
          b. t-nu-s-kičen 'I am eating'   d. no-kas   'eat-INFIN'[10]

The vowel harmony material is far murkier than one would like, and complicated by loss of harmony as a productive rule among younger speakers. Thus we will

not pursue the topic further, however, what we hope to have shown here briefly is that—on the assumption that the reduced vowel ɐ is not neutral but has the features relevant for classification as dominant—the one prefix that may have been expected to participate in the vowel harmony system (when harmony was still productive) systematically failed to do so, in contrast to the agreement suffixes, which were subject to the demands of harmony.

3 The evidence from juncture

In the preceding section, we have examined three areas of Itelmen phonology in which the agreement suffixes are grouped together with the stem in a single domain, but this domain excludes the agreement prefixes. We now turn two other phonological differences between prefixes and suffixes which pick out the left edge of the stem as being phonologically special (e.g., marking the left edge of some domain) but for which it is hard to tell where the right edge is. We may simply say that while the juncture between prefix and stem behaves specially, there is no evidence for special behaviour at the right edge of the stem.

3.1 The distribution of ejectives

The agreement/inflectional prefixes *t-* (1sg) and *k-* (participial) have ejective allomorphs before vowels (and possible before nasals and liquids). The alternation is illustrated in (20).

(20) a. t-zəl-čen   'I gave it (to s.o.)' (SW 4)

       b. t'-án-tχzo-s-čen   'I'm placing it' (S3:88)

This alternation is a property of the inflectional prefixes only. Other instances of t/k do not alternate with ejectives, even at junctures. Thus, (21) illustrates non-alternating [t] prevocalically and (22) illustrates preconsonantal ejective [t'] and [k'].

(21) a. tɾʔnu   (Demonstrative)(SW 6)

       b. zəl-it-en   'give-distr-2s/3s'(SW 18)

(22) a. ˚k**t'**xɫknen   'he needed it' (Georg & Volodin 1999:42)

       b. kst**k'**ɫknan   'he jumped down' (Georg & Volodin 1999:42)

Georg & Volodin 1999:48 posit a morphophonemic rule glottalizing /t/ and /k/ before vowel-initial stems (t-,k- → t'-,k'- / __ [V…). They go on to suggest that "This process might find its explanation in that in an earlier stage of the Itelmen language history vowels in onset position — in contrast to today — were (as for instance in German) accompanied by an automatic laryngeal stop, and consequently, the change from simple to glottalized [i.e., ejective -B&W] stops becomes understandable as a simple cluster formation or (in other words) phonologization of a phonetic cluster."[11] In essence, one can see this as a reflex of

the same process responsible for the insertion of the glottal stop in German examples such as (23), i.e., the failure of the prefix to (re-)syllabify with the stem.

(23)   ver-antworten   [fer.ʔant.voɐ.tən]   *[fe.rant.voɐ.tən]   (German)
       Prefx-answer   [syllabification, glottal stop insertion]
       'to answer for / take responsibility for'

As we have identified no comparable process at suffix junctures, we are tempted to take this as evidence for a syllabification asymmetry which dovetails nicely with the schwa epenthesis facts (presumably ultimately connected to syllabification) discussed in section 2.1 above.

3.2 Historical devoicing

Up to this point, essentially everything we have presented holds of both the Southern and Northern dialects of (Western) Itelmen. There is, however, one difference between the two dialects which appears to be relevant for present concerns. Both dialects have a series of voiced {β, ẓ, ɣ(ʷ)} and a series of voiceless {ɸ, ṣ, x(ʷ)} fricatives. While both dialects allow both classes of fricatives in initial position, there are some cases where a stem-initial voiced fricative in the North corresponds to a voiceless fricative in the South, (see also Moll 1960).

(24)   a. Northern (Sedanka)   b. Southern (Khairjuzovo, Napana)
        zunʲɬ-   'to live' (AS 1)   sunʲɬ-   'to live' (MQ 6)
        zlatumx   'sibling' (SW 29)   səl:atumx   'sibling' (Rels)
        zin-   'forest' (Trees)   zin-   'forest' (Trees)
        βit-   'seal' (KL 16)   ɸit-   'seal' (VKh)
        βaɬč   'knife' (SW 2)   ɸaɬč   'knife' (VKh)
        ɣiləŋ   'net' (S3:88)   xiləŋ   'net' (VKh)

These correspondences arise only in stem-initial position, for example in cases of (full or partial) suffixal reduplication (not synchronically productive) only the consonant in the stem (and not the one in the reduplicant) is affected.

(25)   a. **β**it-**β**it   'seal-SG' (KL16) (No) b. **ɸ**it-**β**it 'seal-SG' (VKh) (So)
        βiz-**β**eʔn 'bushes' (Trs) (No)   **ɸ**iz-**β**-um 'bushes-collective' (So)

Intriguingly, sound change devoicing initial fricatives in the Southern dialects applied only to a domain which excludes the inflectional prefixes. As

(26) a. k-**zunʲɬ**-qzu-kneʔn (No)   b. k-**sunʲɬ**-qzu-knen (So)
      PRT-live-ASP-PRT.PL   PRT-live-ASP-PRT
      'They lived' (AS.1)   'He lived' (MQ6)

It should be kept in mind that the prefix (and suffix) system is cognate throughout Chukotko-Kamchatkan (constituting of the strongest arguments for the Itelmen - C-K affiliation, see Comrie 1983). It is therefore not plausible that the Itelmen-internal change was word-initial at any point in the language's history. we conclude once again therefore that the juncture between prefix and stem marks the left edge of some special domain.

4 Morphology revisited
In the few pages that remain, we would like to indicate two further morphological asymmetries between prefixes and suffixes one of which may bear on the issue of the internal constituency of the verb word.

4.1 Agreement in non-finite forms
Agreement suffixes cannot co-occur with infinitival suffixes. This is not (plausibly) the result of a templatic, position-class effect (on Volodin's 1976 position class analysis of Itelmen, the infinitive marker –s occupies position 12 and the agreement suffixes positions 17 and 18). Nor is this cooccurrence restriction attributable to a syntactic/semantic inconsistency of some sort. Itelmen does permit agreement morphemes to surface in infinitival verbs, but only at the prefix position. An example is given in (27).

(27) xač   **xɐn**-kziɬ-**kas** !
      let's (R: давай)   1/3SUBJ.IRR-gather-INTRANS.INFIN.
      'Let's gather our things together.' (MQ 10)

Such examples are not uncommon in the irrealis mood (which is used to form imperatives, hortatives/suggestions, potential and negative futures) and indicate that the non-occurrence of suffixal agreement in infinitives cannot plausibly be reduced to a ban on agreement in infinitives per se, but is truly a morphological (or syntactic) fact about Itelmen, one which suggests again a closer connection between the suffix and the verb root than between the prefix and the verb root.

4.2 Allomorphy once again
There is one final consideration from morphology, in fact from the kinds of allomorphy relations with which we started this paper, that is suggestive of a closer relationship between the suffix and the verb root than obtains between the agreement prefix and the verb root. In the list of allomorphs of the object agreement suffixes given in (4), there are two which are conditioned by the conjugation class of the verb (-x [I] ~ -xč [II] and -xiʔn [I] ~ -iʔn [II]).[12] These alternations are not reducible to phonology in any obvious way and hence must be

dealt with in terms of an alternation (i.e., allomorphy) sensitive to a diacritic feature of the verb root. While this is not extensive allomorphy, this contrasts with the prefixes, where there is no allomorphy whatsoever for the class of the verb root (i.e., beyond purely phonological alternations such as the glottalization discussed in section 3.1). From a theoretical perspective, there are various ways of interpreting this asymmetry, if it is systematic and not merely accidental. (Though note that the class marker is not always adjacent (linearly or structurally) to the verb root (e.g., tense may intervene)). Nevertheless, for our purposes, we simply identify this as another instance of a manner in which the suffixes are more intimately connected to the verb stem than the prefixes are, adding weak support to the general body of evidence in favour of the hierarchical ordering of the verb word given in (1)a.

5 Summary and conclusions

We have argued in this paper that there is evidence for a hierarchical ordering of the agreement affixes in the Itelmen verb, such that the prefix is external to the constituent that contains the verb root, derivational affixes and the inflectional suffixes, i.e., (1)a. The evidence which we have presented here was the following. First (section 2.1), inflectional prefixes (but not derivational ones) are exempt from the rule of schwa epenthesis given in (6), but the rule does apply to suffixes. If this is for a principled reason, then it suggests that the domain for (6) includes the suffixes, but excludes the prefixes. On the (null) hypothesis that the phonological domains correlate with the morphological constituency, this supports the organization in (1)a. Prominence (section 2.2) also appears to divide the word into domains, such that the primary domain for prominence includes the suffixes but excludes the prefixes (which form their own domain). Again, if these phonological domains correlate with morphological constituency, we have evidence for (1)a over (1)b. A third prefix-suffix asymmetry arises with respect to the vowel harmony (section 2.3) in the recent past; to the extent we can deduce certain patterns of behaviour from the data presented in Volodin 1976, it appears as if the domain for vowel harmony included the suffixes but excluded the (agreement) prefixes. We have also examined a morphophonemic alternation involving glottalization (ejectivization) of certain prefixes (section 3.1). Georg & Volodin 1999 have offered a suggestion about the source of these ejectives, which, if they are correct, would indicate that prefixes do not syllabify with the stem, while suffixes do. Given directional asymmetries inherent in syllabification, it is not clear how strong this argument is, but it is clearly consistent with the structure we are advocating here. In section 3.2 we examined a historical process which can only be described with reference to the left edge of the stem (i.e., excluding the prefixes)—this points to the juncture between prefix and suffix as marking the left edge of some relevant domain. Finally, sections 4.1 and 4.2 presented two types of morphological evidence which again suggest that the suffixes show a closer relation to the verb stem than the inflectional prefixes do.[13]

We submit, therefore, that to the extent the various caveats raised in the course of this investigation may ultimately be controlled for, there is clear evidence for a hierarchical structure to the Itelmen verb and it is the one in (1)a.

Acknowledgments

Notes

[1] In some sources, the language has been referred to as Kamchadal. The name currently in use (also written *itel'men*, from Russian ительмен) is from the ethnonym *itənmən* (Volodin 1976:5). Except as noted, the data in this paper was collected by the first author on two extended trips to Kamchatka (1993-94, Spring 1996) and by both authors on a subsequent trip (July-September 1996). The two varieties of the language which we refer to as Northern (No.) and Southern (So.) are both varieties of what has been called Western Itelmen following the classification by Krasheninnikov 1755/1994:137.

The following abbreviations are used in this paper: DIMinutive, EMPHatic DATive, ACCusative, NOMinative, LOCative, ERGative, ABSolutive, VOCative, POSSessive, TNS=tense, ASPect, PRESent, FUTure, IRRealis mood, HORTative, HABITual, DISTRIButive, INFinitive, AUXiliary, ADJective, NEGative suffix, AGReement, SUBject, OBJect, OBLique, IMPRS=impersonal, II=class II conjugation, SG=singular, PL=plural.

Discrete morphemes are separated by hyphens in the examples and the glosses; a dot in the glosses separates distinct features expressed on a single portmanteau morpheme. Where a gloss has the form, e.g., 2PL>3SG it indicates a portmanteau for second person plural subject acting on third person plural direct object.

Examples are broadly transcribed in IPA (i.e., various allophonic alternations such as automatic palatalization of /ɬ, l, n/ before /č/ are not indicated so as to increase readability). For typographic reasons, underdots have been omitted on s,z, which in Itelmen are apical, post-alveolar fricatives. Note also, that sequences written as a glottal stop plus nasal or "/l" correspond to a single, glottalized segment. Note finally that certain uncertainties in the transcription (e.g., vowel quality) have been regularized where they do not bear on the segmentation or the analysis here.

[2] This pattern has been described as a peculiar kind of split-ergativity—nominative prefixes but absolutive suffixes (there is no case marking on direct arguments in Itelmen). Arguments that the pattern is fundamentally subject vs. object were first presented in Volodin & Vakhtin 1986, see Bobaljik & Wurmbrand 2001 for discussion and additional arguments. Bobaljik 1998b and Fortescue 1997 also argue that the cognate morphology in Chukchi is aligned along subject-object lines rather than constituting an ergative split.

[3] There are two observations which stand to be made at this point. First, while it is unsurprising from some perspectives that subject agreement should be more peripheral than object agreement, it is not a priori obvious that this should be the case, counter-examples are well-documented (see,

e.g., Bittner & Hale 1996) and some have argued for a structure like (1)b for closely related Chukchi Halle & Hale 1997. Secondly, it is well documented that phonological structure and morphosyntactic structure do not always align neatly (examples of mismatches are generally discussed under the term "bracketing paradoxes"). This must be kept in mind when evaluating the strength of the arguments presented below.

[4] The main points of this section were reported in Bobaljik 1998a.

[5] There is a caveat to be made here which is that we cannot exclude the possibility that the four agreement prefixes that begin with sonorants are simply coincidentally all lexically specified as exceptions to (6). Lexically specified extra-syllabicity at the left edge of the stem (and only at the left edge) must be countenanced in the face of near minimal pairs like: lq-laχ 'cold-ADJ' (without schwa epenthesis) versus əlt-laχ 'soft-ADJ' (Volodin & Khaloimova 1989). We take it as a methodological point that since accidents can never be truly excluded, we will assume the analysis involving systematicity in the data unless it is clearly contradicted.

[6] We will use the term prominence in this section in order to remain agnostic about what the actual phonetic correlate or correlates of prominence are (i.e., amplitude and/or pitch).

[7] We have avoided examples in which the suffix terminates in a glottalised nasal as these may introduce additional complexities.

[8] There are no polysyllabic prefixes, so we cannot test for the existence of the tapering off effect in the first proposed domain. We posit the additional domain (as opposed to, e.g., extrametricality) on the grounds that the prefixes clearly receive some degree of prominence. For the purposes of this paper, though, the important point is only to show that the prefixes are outside the domain that includes the suffixes.

[9] Example (18)b contains the future/desiderative suffix –aɬ-, this suffix (along with a handful of other morphemes including the adjectival suffix –laχ) does not participate in the harmony system (it doesn't lower neighbouring recessive vowels) but it is transparent for the lowering of suffixal vowels by stem vowels (see Volodin 1976:46). The lexically idiosyncratic transparency of this affix is quite stable across the 100 years of material we have.

[10] For (19)d, the form Volodin 1976:49 actually gives is *no-kes*. We have changed the vowel to "a" following our own findings and also Volodin's subsequent work in which the form is given as *nokas* Volodin & Khaloimova 1989:62, Georg & Volodin 1999:32. There may in fact be a real issue here. Thus, in Chukchi, it is clear that there are morphemes with no dominant vowels (or no underlying vowels at all) but which are diacritically marked to behave as dominant in the harmony system (see Kenstowicz 1979:408). Volodin suggests that certain affixes in Itelmen, among them the "first" infinitive –(k)(e/a)s seen here, and an unproductive nominalizing suffix which Volodin suggests relates *nu-* 'eat' to *nos* 'dried salmon' (a staple food).

[11] "Dieser Prozeß mag darin seine Erklärung finden, daß in einem früheren Stadium der itelmenischen Sprachgesichte anlautende Vokale - im Gegensatz zu heute - wie etwa im Deutschen von einem automatischen laryngalen Verschlußlaut begleitet waren und der Wandel von einfachen zu glottokklusiven Verschlußlauten mithin als einfahe Clusterbildung - bzw. Phonologisierung eines phonetischen Clusters - verständlich wird."

[12] Transitive verbs in Itelmen conjugate as either class I (unmarked) or class II (of which there are only a handful). The classification appears to have no syntactic, semantic or phonological basis and thus requires a diacritic. In general, the class marker appears in the suffix group after the tense suffix (Ø in the past) but before the agreement markers.

[13] It should be noted finally that to the extent that the evidence we have presented indicates that inflectional prefixes are in some sense only loosely connected to the verb stem (c.f., the intuitive content of the term "clitic") this sets the inflectional prefixes apart from derivational prefixes such as the lexical causatives mentioned at various points. This is important since it challenges those theoretical approaches which maintain that all prefixes are systematically different from all suffixes (e.g., Kayne 1994, Brody 2000).

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